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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/445,423	12/10/1999	KAZUO HATA	2839-0072-0	9913

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EXAMINER	
FERGUSON, LAWRENCE D	
ART UNIT	**PAPER NUMBER**
1774	

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/445,423	HATA ET AL.	
	Examiner	Art Unit	
	Lawrence D. Ferguson	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-8,10,12 and 14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7* is/are allowed.

6)☒ Claim(s) *5-6, 8, 10 and 12* is/are rejected.

7)☒ Claim(s) *14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment mailed December 19, 2005. Claims 9 and 11 were cancelled and claim 8 was amended rendering claims 5-8, 10, 12 and 14 pending in this case.

Claim Rejections – 35 USC § 103(a)

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 5-6 and 8, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hata et al. (U.S. 6,001,761).

Hata discloses a method for producing a ceramics sheet, where a calcined green sheet is interposed between porous green sheets, which are calcined and contain particles having an average particle diameter of 2 to 100um (column 4,lines 28-61) where the green and porous sheets are heated (baked) (column 4, lines 35-45). Hata further discloses the particle has a weight percent of 80 or more (column 7, lines 20-22) where the sheets average 0 cracks (defects) in Examples 1-9 in Table 1. Hata does not

explicitly teach the particles being of a specific shape or configuration, however, it would have been obvious to one of ordinary skill in the art to make the particles spherical, since such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art. Hata does not disclose the spherical ceramic particles having a ratio of major axis relative to a minor axis of 1 to 3. Because Hata has a ceramic green sheet with equivalent materials as the claimed invention, it would have been expected for the major and minor axis of the spherical ceramic particles to be the same as Applicant claims.

Claim Rejections – 35 USC 102(e)

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 5-6 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Takeuchi et al. (U.S. 5,955,392).

Takeuchi discloses a method for making a calcined ceramic green sheet comprising ceramic particles having a spherical diameter of 0.01-0.5μm (column 2, lines

1-20; column 3, lines 34-40; column 8, lines 19-21 and Table 1) where the ceramic green sheet may be laminated with other green sheets (spacers) and fired (baked) simultaneously (column 6, lines 8-10) providing a green sheet sandwiched between two green sheets, which are calcined (column 8, lines 19-21). Takeuchi discloses it is possible for the surface of the ceramic sheet to have 1 defect on the surface (column 4, lines 3-10), which meets the claim limitation of having not more than 5 defects in an area of 900mm^2 from the first green sheet. The reference discloses the spherical ceramic particles are greater than eighty weight percent (column 7, lines 12-15).

Claim Rejections – 35 USC § 103(a)

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (U.S. 5,955,392).

Takeuchi is relied upon for claim 5 as above. Takeuchi does not disclose the spherical ceramic particles having a ratio of major axis relative to a minor axis of 1 to 3. Because Takeuchi has a ceramic green sheet with equivalent materials as the claimed

invention, it would have been expected for the major and minor axis of the spherical ceramic particles to be the same as Applicant claims.

8. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The closest prior art does not teach or suggest the recited method for producing a ceramic sheet further including where the calcined sheet is obtained by calcining a second green sheet at a temperature that is 50 to 300 C lower than a sintering temperature of the second green sheet. The prior art does not teach motivation or suggestion for modification to make the invention as instantly claimed.

9. Claim 7 is allowed. The closest prior art does not teach or suggest the recited method for producing a ceramic sheet further including where each of the spacers has a sintering temperature 50 to 300 C higher than the sintering temperature of the first green sheet. The prior art does not teach motivation or suggestion for modification to make the invention as instantly claimed.

Response to Arguments

10. Applicant's arguments to 35 USC 103(a) being unpatentable over Hata et al. (U.S. 6,001,761) has been considered but is unpersuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the cracks on the ceramic sheet are generated by a load applying test, not by baking a green sheet) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicant further argues the term defects used in the present application is quite different from the term cracks used in Hata. Examiner is not persuaded by this argument because the specification at page 10, lines 3-7, defines the term "defect" as a foreign matter present on the surface or inside the ceramic sheet, a flaw on the surface thereof and a stain adhering to the surface thereof. Examiner interprets cracks as a flaw on the surface thereof of the ceramic sheet of Hata. Applicant argues Hata is not directed to a method for producing a ceramic sheet having few defects, which is an intended use, which is given little patentable weight.

Applicant's arguments to 35 U.S.C. 102(e) as being anticipated by Takeuchi et al. (U.S. 5,955,392) and 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (U.S. 5,955,392) has been considered but is unpersuasive. Applicant argues Takeuchi provides a ceramic sheet having many defects because gases from the binder contained in the green sheets cannot easily be removed from the green sheets during firing. Gases are not defects and the gases from the binder, whether or not they can easily be removed, can be removed based upon the temperature and length of time while firing the green sheets.
Applicant further argues Takeuchi fails to disclose or suggest firing a green sheet laminated between spacers that were calcined prior to firing. In column 8, lines 1-20 discloses the ceramic

material is calcined and then the green sheet is fired, where the ceramic green sheet may be laminated with other green sheets (spacers) and fired (baked) simultaneously (column 6, lines 8-10).

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Ferguson whose telephone number is 571-272-1522. The examiner can normally be reached on Monday through Friday 9:00 AM – 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye, can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence Ferguson
Patent Examiner
AU 1774

RENA DYE
SUPERVISORY PATENT EXAMINER
A.U. 1774 3/16/04